animals from their enemies, a series of about 140 experiments, covering a period of six years, has been carried out with various species of caged, and in a few cases with wild birds, to which were fed several kinds of small mammals and insects. The latter were placed upon different backgrounds, with some of which they formed strong contrasts, while others they closely resembled. The birds were then allowed to choose between that prey which resembled, and that which contrasted with its background.

The experiments may be divided into two classes —those in which the birds usually approached their prey swiftly from a short distance, and those in which they approached it slowly, and seized it only after careful inspection. In the former class over 90 per cent. of the combinations chosen were contrasting, while in the latter, the contrasting combinations were chosen but little oftener than the non-contrasting ones.

The experiments indicate that the color of a motionless animal has a decided survival value when it is attacked by birds which approach it swiftly from a distance of even a few feet.

Immunity of Fowls to Cysticerci of Certain Cestodes: J. E. Ackert

Regeneration of Head Parts in Earthworms After Removal of the Anterior Portion of the Digestive Tube: H. R. Hunt. (Introduced by Herbert W. Rand.)

The object of these experiments was to determine whether the brain and commissures could be regenerated and the stomodeum formed in regenerating earthworms in the absence of the anterior end of the digestive tube. The first three anterior segments of the worms were removed and the digestive tube carefully removed from the first five or six segments posterior to the point where the head was cut off. One hundred and seventy-seven individuals of *Eisenia fœtida* and thirty-two individuals of *Helodrilas calliginosus* were used. Seventy-eight worms survived. In six specimens head parts regenerated when the anterior end of the digestive tube was three to five segment lengths from the anterior end of the worm. The six worms fall into three classes: in the first class a stomodeum was formed; in the second class a brain fundament and commissures were regenerated; in the third class a brain fundament and commissures regenerated and a stomodeum was formed.

I am indebted to Professor H. W. Rand, of Harvard University, for many helpful suggestions.

An Interesting Snail from Minnesota and a Problem in Geographical Distribution: R. W. H. Wolcott.

Exhibits

During the meeting the following exhibits were made in one of the rooms of the Zoological Laboratory of the University of Pennsylvania:

Exhibits and Demonstrations

Franklin D. Barker: The Absence of Male Reproductive Organs in Trematodes.

J. W. Mavor: The Larval and Post-larval Development of the Coral, *Agaricia Fragilis*, Dana.

Chester H. Heuser: Drawings and Models of the Stomachs of Embryo Cat, Albino Rat, Pig and Sheep.

E. J. Werber: Demonstrations of Some Sectioned and Unsectioned Material of Monstrous Embryos of Fundulus.

Harold S. Colton: Methods Used in Producing Changes Within Pure Lines of the Pond Snail, *Lymnæa*. (Room 104, Zoological Laboratory.)

T. H. Morgan, A. H. Sturtevant, C. B. Bridges and H. Muller: Demonstration of the Four Hereditary Groups and the Four Pairs of Chromosomes of *Drosophila*.

S. O. Mast: Autochromes from Life Showing Adaptation in Color in Flounders.

Caswell Grave,
Secretary-treasurer, American Society of Zoologists

SOCIETIES AND ACADEMIES

THE AMERICAN MATHEMATICAL SOCIETY

The one hundred and seventy-fifth regular meeting of the society was held at Columbia University on Saturday, February 27, 1915, with an attendance of 39 members at the two sessions. President E. W. Brown occupied the chair, being relieved by Vice-president Oswald Veblen at the afternoon session. The following persons were elected to membership: Professor J. V. Balch, Bethany College; Professor E. J. Berg, Union College; Mr. Millar Brainard, Chicago, Ill.; Mr. L. C. Cox, Purdue University; Mr. C. H. Forsyth, University of Michigan; Dr. H. C. Gossard, University of Oklahoma; Mr. M. S. Knebelman, Lehigh University; Dr. W. V. Lovitt, Purdue University; Dr. L. C. Mathewson, Dartmouth College; Mr. A. L. Miller, University of Michigan; Dr. Bessie I. Miller, Johns Hopkins University; Mr. I. R. Pounder, University of Toronto; Mr. L. L. Steimley, Indiana University; Mr. Chid-Cheow

Yen, Tangshan Engineering College. Three applications for membership were received.

The following papers were read at this meeting:

M. Fréchet: "Sur les fonctionnelles bilinéaires."

A. S. Hathaway: "Gamma coefficients."

P. H. Linehan: "Equilong invariants of irregular and regular analytic curves."

B. H. Camp: "Multiple integrals over infinite fields."

A. R. Schweitzer: "On the methods of mathematical discovery."

P. R. Rider: "An extension of Bliss's form of the problem of the calculus of variations, with applications to the generalization of angle."

E. B. Wilson: "The Ziwet-Field note on plane kinematics."

O. E. Glenn: "Ternary transvectant systems."

E. J. Miles: "Note on the application of the calculus of variations to a problem in mechanics."

A. B. Frizell: "The permutations of the natural numbers can not be well ordered."

C. H. Forsyth: "Osculatory interpolation formulas."

J. F. Ritt: "A function of a real variable with any desired derivatives at a point."

J. F. Ritt: "On Babbage's functional equation."

The next meetings of the society will be in Chicago, April 2–3, and New York, April 24. The summer meeting will be held at the University of California and Stanford University, August 3–5.

F. N. COLE,
Secretary

THE BIOLOGICAL SOCIETY OF WASHINGTON

THE 533d meeting of the Biological Society of Washington was held in the Assembly Hall of the Cosmos Club, Saturday, January 9, 1915. It was called to order by President Bartsch at 8 P.M. About 40 members were present.

The minutes of the 531st meeting were read and approved.

Waldo Schmitt, of the U. S. National Museum, was elected to active membership.

Under the heading Brief Notes and Exhibition of Specimens, Dr. L. O. Howard made remarks on the meetings held at Philadelphia during convocation week and Dr. Pilsbry discussed certain aspects of the Hawaiian land-shell problem. The latter said early collecting was done in the valleys, but recent work showed chief home of species to be on ridges. Distribution of forms occurred in groups and there were many instances of Mendelian inheritance between different forms carried out on large natural scale.

The first paper on the regular program was by Wm. Palmer: "An Unknown Fossil." Mr. Palmer exhibited the specimen from the Calvert Cliffs of Chesapeake Bay and hoped members would express views as to its nature. His own view was that it might represent the lower jaw of an unknown turtle. From the same locality other fossils were shown that had previously proved very difficult to identify. Mr. Palmer's communication was discussed by Professor Hay.

The second paper was by Professor Hay: "An Albino Terrapin." The unique specimen was exhibited; it was hatched near Beaufort, N. C.; an attempt was made to raise it, but it lived only a few months. Professor Hay took occasion to show excellent lantern slides of certain interesting crustaceans, especially of *Limnoria lignorum*, wood-boring Isopod, and of *Xylotria*, a wood-boring mollusk. Professor Hay's communication was discussed by Messrs. Bartsch, Wilcox, Palmer, Smith, Hopkins and by Miss Rathbun.

The last communication was by M. W. Lyon, Jr.: "Notes on the Physiology of Bats." The speaker stated little was known of exact physiology of bats, but discussed subject from broad standpoint of their physiology of locomotion, of food, adaptation and of special senses. Need of careful experiments on use of, and modern histological work on structure of nose leaves was pointed out. Paper was discussed by Messrs. Howard, Bishop, Hunter, Palmer and Stiles; Mr. Bishop giving an account of a bat roost near San Antonio, Texas, erected with the idea that bats would consume large numbers of malarial mosquitoes, Mr. Hunter stating that an examination of stomach contents of bats showed food of *Nytinomus mexicanus* consisted of 95 per cent. moths, the rest being carabid beetles, hymenopterous insects and a few crane flies, the only Diptera found, no mosquitoes being observed.

ON Tuesday, January 19, 1915, at 8:30 P.M., the Biological Society held a joint meeting with the Washington Academy of Sciences in the auditorium of the National Museum. Dr. Johan Hjort, Director of Fisheries of Norway, delivered an illustrated lecture on "Migrations and Fluctuations of the Marine Animals of Western Europe." About 200 persons were present.

The 534th meeting of the society was held in the Assembly Hall of the Cosmos Club, Saturday, January 23, 1915, with President Bartsch in the chair and 75 persons present.

Mr. R. A. Ward was elected to active membership.

Under heading Brief Notes, etc., Dr. Johan Hjort, Director of Fisheries of Norway, called attention to the large numbers of herring caught in Norwegian waters during the last few years, most of them belonging to what he termed the "1904 Class." Dr. Hjort attributed the great success of the "1904 Class" to the known lateness of season when it had been spawned and when the plankton was abundant. Early in spring the sea is practically barren of plankton and fish hatching at that time have little food.

The regular program was an illustrated paper by Mrs. Agnes Chase on "Developing Instincts of a Young Squirrel." Mrs. Chase had made careful observations and notes on the bringing up of a young gray squirrel during the past spring and summer. The animal was very young when first acquired by the speaker, needing to be fed on milk with a medicine dropper. Mrs. Chase described its growth, acquisition of squirrel-like habits and instincts. It was not brought up as a pet, but was given every freedom to develop its natural traits. At maturity it met with wild members of its own species, at first returned home, but finally remained away. Mrs. Chase had a few records of the squirrel after it had left; at one time it was seen in company with seven wild squirrels in a strawberry patch where it had once learned to feed. Wild squirrels had not been seen in this patch before and the speaker concluded they had been taught to eat strawberries and shown the place by her former pet.

The rest of the evening was given over to an exhibition of lantern slides on biological subjects. W. W. Cooke showed views of bird life; Dr. Smith, of Japanese silk industry; Wm. Palmer, of seals and birds of Pribilof Islands; Dr. Bartsch, of local birds.

M. W. Lyon, Jr.,
Recording Secretary

The New Orleans Academy of Sciences

The regular monthly meeting of the New Orleans Academy of Sciences was held at Tulane University on Tuesday, January 19. In the absence of the President, Dr. Irving Hardesty presided. Two papers were presented at the meeting, the first by Dr. W. O. Scroggs, of the history department of Louisiana State University, on "The Mosquito Kingdom and Henry L. Kinney." According to Dr. Scroggs:

Early in the nineteenth century agents of Great Britain on the Mosquito coast, in eastern Nicaragua, persuaded the native chiefs in this region to recognize one of their number as king, and this half-breed sovereign was persuaded in turn to place his realms under the protection of the British Crown. In the United States it was feared that the British claims thus set up would prove an obstacle to the construction of the interoceanic canal. The Mosquito king meanwhile had made vast grants of his land to enterprising traders along the coast, and these concessions were bought up by an American adventurer, Henry L. Kinney, who undertook in 1855 to colonize the Mosquito coast with Americans and counteract British influences. Kinney's plans were laid on an elaborate scale, but he encountered such opposition from a syndicate of American capitalists at home and from a rival adventurer in Nicaragua, William Walker, that the enterprise failed, and he was financially ruined.

The second paper was by Dr. Gustav Mann, professor of physiology, Tulane University: "What part does water play in our economy?"

Dr. Mann discussed water metabolism. After a general survey of the total quantity of water in individuals of different ages and of that for individual tissues the absorption of water by the intestines, its storage especially in the muscles and its formation inside the body as a result of oxidation of fats, sugars and proteins was gone into. Then the advantages of the circulation of water within the body, the elimination by the salivary glands, the stomach and the intestines and re-absorption of water along with dissolved food substances was pointed out. The work done by Hawk along with Mattill and Hattrem was criticized. There can not be any doubt that an absorption of 4 to 5 liters of water per day greatly helps the digestion of carbohydrates, fats and proteins. It is necessary, however, to constantly bear in mind the amount of salt which is taken with the food. The effect which an excess of salt produces is to render the globulins of the body more soluble while large quantities of water produce the opposite effect. The great advantage of giving nutritive solutions hypodermically and thereby insuring a slow absorption of food radicals in contradistinction to giving salt solutions intravenously for purposes of raising blood pressure was explained. When talking about the elimination of water by the skin, lungs and kidney, the advantage of breathing through the nose and thus keeping the air passages moist to allow foreign material to be caught in the nasal passages was emphasized.

Both papers were the subject of considerable discussion. At the conclusion of the papers, Dr. Mann made an exhibit of brain and thalamus dissections made permanent by infiltration with solid paraffin.

R. S. Cocks,
Secretary